

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1. (Currently amended) A method for producing an organic thin film in which an organic thin film is formed on a surface of a substrate, comprising a step (A) of bringing said substrate into contact with an organic solvent solution comprising a metal-based surfactant having at least one hydrolyzable group, and a catalyst, wherein the water content within said organic solvent solution is either set to or maintained within a range of from 50 ppm to the saturated water content for the organic solvent, and said catalyst is at least one material selected from the group consisting of metal oxides; metal hydroxides; metal alkoxides; chelated metal compounds; coordinated metal compounds; partial hydrolysis products of metal alkoxides; hydrolysis products obtained by treating a metal alkoxide with no less than a two-fold equivalence of water; ~~organic acids; and~~ silanol condensation catalysts; ~~and acid catalysts.~~

Claim 2. (Previously presented) A method for producing an organic thin film according to claim 1, wherein said organic solvent solution is prepared by using from 0.001 to 1 mol, or an oxide-equivalent quantity of 0.001 to 1 mol, of said catalyst, per 1 mol of said metal-based surfactant.

Claim 3. (Previously presented) A method for producing an organic thin film according to claim 1, wherein said water content within said organic solvent solution is maintained within a range of from 50 ppm to the saturated water content for the organic solvent, and said step (A) is repeated at least two times using the same solution.

Claim 4. (Previously presented) A method for producing an organic thin film according to claim 3, wherein in repeating said step (A) two or more times, said step (A) is conducted with two or more substrates being brought into contact with the same solution.

Claims 5-11 (Canceled).

Claim 12. (Currently amended) A method for producing an organic thin film in which an organic thin film is formed on a surface of a substrate, comprising a step (A) of bringing said substrate into contact with an organic solvent solution comprising a metal-based surfactant having at least one hydrolyzable group, and a catalyst, wherein the water content within said organic solvent solution is either set to or maintained within a range from 50 to 1,000 ppm, and said catalyst is at least one material selected from the group consisting of metal oxides; metal hydroxides; metal alkoxides; chelated metal compounds; coordinated metal compounds; partial hydrolysis products of metal alkoxides; hydrolysis products obtained by treating a metal alkoxide with no less than a two-fold equivalence of water; ~~organic acids; and~~ silanol condensation catalysts; ~~and acid catalysts.~~

Claims 13-18 (Canceled).

Claim 19. (Previously presented) A method for producing an organic thin film according to claim 1, wherein said metal-based surfactant having at least one hydrolyzable group is a compound represented by a formula (I) shown below:



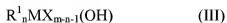
(wherein, R^1 represents a hydrocarbon group that may contain a substituent, a halogenated hydrocarbon group that may contain a substituent, a hydrocarbon group containing a linkage group, or a halogenated hydrocarbon group containing a linkage group, M represents at least one metal atom selected from a group consisting of a silicon atom, germanium atom, tin atom, titanium atom, and zirconium atom, X represents a hydroxyl group or a hydrolyzable group, n represents an integer from 1 to (m-1), m represents an atomic valence of said metal M, and in those cases where n is 2 or greater, said R^1 groups are either identical or different, and in those cases where (m-n) is 2 or greater, said X groups are either identical or different, although of (m-n) X groups, at least one X group is a hydrolyzable group).

Claims 20-21 (Canceled).

Claim 22. (Withdrawn) A method for producing an organic thin film in which an organic thin film is formed on a surface of a substrate, comprising a step of bringing said substrate into contact with an organic solvent solution comprising a metal-based surfactant having at least one hydroxyl group, wherein the water content within said organic solvent solution is either set to or maintained at 50 ppm or more.

Claim 23. (Withdrawn) A method for producing an organic thin film according to claim 22, wherein said water content within said organic solvent solution is either set or maintained within a range from 50 to 1,000 ppm.

Claim 24. (Withdrawn) A method for producing an organic thin film according to claim 22, wherein said metal-based surfactant having at least one hydroxyl group is a compound represented by a formula (III) shown below:



(wherein, R^1 represents a hydrocarbon group that may contain a substituent, a halogenated hydrocarbon group that may contain a substituent, a hydrocarbon group containing a linkage group, or a halogenated hydrocarbon group containing a linkage group, M represents at least one metal atom selected from a group consisting of a silicon atom, germanium atom, tin atom, titanium atom, and zirconium atom, X represents a hydroxyl group or a hydrolyzable group, n represents an integer from 1 to (m-1), m represents an atomic valence of said metal M, and in those cases where n is 2 or greater, said R^1 groups are either identical or different, and in those cases where (m-n-1) is 2 or greater, said X groups are either identical or different).

Claim 25. (Previously presented) A method for producing an organic thin film according to claim 1, wherein said step of bringing said substrate into contact with said organic solvent solution is conducted within a space that is maintained at a humidity of at least 40% RH.

Claim 26. (Previously presented) A method for producing an organic thin film according to claim 1, wherein said step of bringing said substrate into contact with said organic solvent solution is conducted within a space that is maintained at a humidity of at least 60% RH.

Claim 27. (Previously presented) A method for producing an organic thin film according to claim 1, wherein said organic solvent solution is a hydrocarbon-based solvent solution or a fluorinated hydrocarbon-based solvent solution.

Claim 28. (Previously presented) A method for producing an organic thin film according to claim 1, wherein said organic thin film is a crystalline organic thin film.

Claim 29. (Previously presented) A method for producing an organic thin film according to claim 1, wherein said organic thin film is a monomolecular film.

Claims 30-34 (Canceled).

Claim 35. (Withdrawn) A self-assembly film forming solution for forming a self-assembly film on a surface of a substrate, wherein molecules for forming said self-assembly film form an aggregate within said solution.

Claim 36. (Withdrawn) A self-assembly film forming solution according to claim 35, wherein molecules for forming said self-assembly film are molecules of either a metal-based surfactant having at least one hydroxyl group or hydrolyzable group, or a derivative thereof.

Claim 37. (Withdrawn) A self-assembly film forming solution according to claim 35, wherein said aggregate is obtained by treating a metal-based surfactant having at least one hydroxyl group or hydrolyzable group with a catalyst capable of interacting with said metal-based surfactant, and water.

Claims 38-40 (Canceled).

Claim 41. (Withdrawn) A self-assembly film forming solution according to claim 35, wherein an average particle diameter of said aggregate is within a range from 10 to 1,000 nm.

Claim 42. (Withdrawn) A self-assembly film forming solution according to claim 35, wherein a zeta potential of said aggregate is equal to or greater than a zeta potential of said substrate within an identical solution.

Claim 43 (Canceled).

Claim 44. (Withdrawn) A chemically adsorbed film formed on a substrate, wherein said substrate is not crystalline, and said chemically adsorbed film is crystalline.

Claims 45-48 (Canceled).

Claim 49. (Withdrawn) A method for producing a monomolecular film, comprising a step of applying an organic solvent solution comprising a metal-based surfactant having a hydroxyl group, hydrocarbonoxy group, or acyloxy group to a substrate, using at least one method selected from a group consisting of dipping methods, spin coating methods, roll coating methods, Meyer bar methods, screen printing methods, offset printing methods, brush coating methods, and spray methods.

Claims 50-54 (Canceled).

Claim 55 (Currently amended) A method for producing an organic thin film in which an organic thin film is formed on a surface of a substrate, comprising a step (A) of bringing said substrate into contact with an organic solvent solution comprising a metal-based surfactant having at

least one hydrolyzable group, and a catalyst, wherein the water content within said organic solvent solution is maintained within a range from 50 to 1,000 ppm, and said step (A) is repeated at least two times using the same solution, and said catalyst is at least one material selected from the group consisting of metal oxides; metal hydroxides; metal alkoxides; chelated metal compounds; coordinated metal compounds; partial hydrolysis products of metal alkoxides; hydrolysis products obtained by treating a metal alkoxide with no less than a two-fold equivalence of water; ~~organic acids; and~~ silanol condensation catalysts; ~~and acid catalysts.~~

Claim 56 (Canceled).

Claim 57. (Previously presented) A method for producing an organic thin film according to claim 3, wherein said metal-based surfactant having at least one hydrolyzable group is a compound represented by a formula (I) shown below:



(wherein, R^1 represents a hydrocarbon group that may contain a substituent, a halogenated hydrocarbon group that may contain a substituent, a hydrocarbon group containing a linkage group, or a halogenated hydrocarbon group containing a linkage group, M represents at least one metal atom selected from a group consisting of a silicon atom, germanium atom, tin atom, titanium atom, and zirconium atom, X represents a hydroxyl group or a hydrolyzable group, n represents an integer from 1 to (m-1), m represents an atomic valence of said metal M, and in those cases where n is 2 or greater, said R^1 groups are either identical or different, and in those cases where (m-n) is 2 or greater, said X groups are either identical or different, although of (m-n) X groups, at least one X group is a hydrolyzable group).

Claim 58. (Previously presented) A method for producing an organic thin film according to claim 3, wherein said step of bringing said substrate into contact with said organic solvent solution is conducted within a space that is maintained at a humidity of at least 40% RH.

Claim 59. (Previously presented) A method for producing an organic thin film according to claim 3, wherein said step of bringing said substrate into contact with said organic solvent solution is conducted within a space that is maintained at a humidity of at least 60% RH.

Claim 60. (Previously presented) A method for producing an organic thin film according to claim 3, wherein said organic solvent solution is a hydrocarbon-based solvent solution or a fluorinated hydrocarbon-based solvent solution.

Claim 61. (Previously presented) A method for producing an organic thin film according to claim 3, wherein said organic thin film is a crystalline organic thin film.

Claim 62. (Previously presented) A method for producing an organic thin film according to claim 3, wherein said organic thin film is a monomolecular film.

Claim 63. (Withdrawn) A method for producing an organic thin film according to claim 22, wherein said step of bringing said substrate into contact with said organic solvent solution is conducted within a space that is maintained at a humidity of at least 40% RH.

Claim 64. (Withdrawn) A method for producing an organic thin film according to claim 22, wherein said step of bringing said substrate into contact with said organic solvent solution is conducted within a space that is maintained at a humidity of at least 60% RH.

Claim 65. (Withdrawn) A method for producing an organic thin film according to claim 22, wherein said organic solvent solution is a hydrocarbon-based solvent solution or a fluorinated hydrocarbon-based solvent solution.

Claim 66 (Withdrawn) A method for producing an organic thin film according to claim 22, wherein said organic thin film is a crystalline organic thin film.

Claim 67. (Withdrawn) A method for producing an organic thin film according to claim 22, wherein said organic thin film is a monomolecular film.

Claim 68. (New) A method for producing an organic thin film in which an organic thin film is formed on a surface of a substrate, comprising a step (A) of bringing said substrate into contact with an organic solvent solution comprising a metal-based surfactant having at least one hydrolyzable group, and a catalyst, wherein the water content within said organic solvent solution is either set to or maintained within a range of from 50 ppm to the saturated water content for the organic solvent, and said catalyst is at least one material selected from the group consisting of organic acids and acid catalysts, wherein said organic solvent solution is a hydrocarbon-based solvent solution or a fluorinated hydrocarbon-based solvent solution.

Claim 69. (New) A method for producing an organic thin film according to claim 68, wherein said organic solvent solution is prepared by using from 0.001 to 1 mol, or an oxide-equivalent quantity of 0.001 to 1 mol, of said catalyst, per 1 mol of said metal-based surfactant.

Claim 70. (New) A method for producing an organic thin film according to claim 68, wherein said water content within said organic solvent solution is maintained within a range of from 50 ppm to the saturated water content for the organic solvent, and said step (A) is repeated at least two times using the same solution.

Claim 71. (New) A method for producing an organic thin film according to claim 70, wherein in repeating said step (A) two or more times, said step (A) is conducted with two or more substrates being brought into contact with the same solution.

Claim 72. (New) A method for producing an organic thin film according to claim 68, wherein said metal-based surfactant having at least one hydrolyzable group is a compound represented by a formula (I) shown below:



(wherein, R^1 represents a hydrocarbon group that may contain a substituent, a halogenated hydrocarbon group that may contain a substituent, a hydrocarbon group containing a linkage group, or a halogenated hydrocarbon group containing a linkage group, M represents at least one metal atom selected from a group consisting of a silicon atom, germanium atom, tin atom, titanium atom, and zirconium atom, X represents a hydroxyl group or a hydrolyzable group, n represents an integer from 1 to (m-1), m represents an atomic valence of said metal M, and in those cases where n is 2 or greater, said R^1 groups are either identical or different, and in those cases where (m-n) is 2 or greater, said X groups are either identical or different, although of (m-n) X groups, at least one X group is a hydrolyzable group).

Claim 73. (New) A method for producing an organic thin film according to claim 68, wherein said step of bringing said substrate into contact with said organic solvent solution is conducted within a space that is maintained at a humidity of at least 40% RH.

Claim 74. (New) A method for producing an organic thin film according to claim 68, wherein said step of bringing said substrate into contact with said organic solvent solution is conducted within a space that is maintained at a humidity of at least 60% RH.

Claim 75. (New) A method for producing an organic thin film according to claim 68, wherein said organic thin film is a crystalline organic thin film.

Claim 76. (New) A method for producing an organic thin film according to claim 68, wherein said organic thin film is a monomolecular film.

Claim 77. (New) A method for producing an organic thin film according to claim 70, wherein said metal-based surfactant having at least one hydrolyzable group is a compound represented by a formula (I) shown below:



(wherein, R^1 represents a hydrocarbon group that may contain a substituent, a halogenated hydrocarbon group that may contain a substituent, a hydrocarbon group containing a linkage group, or a halogenated hydrocarbon group containing a linkage group, M represents at least one metal atom selected from a group consisting of a silicon atom, germanium atom, tin atom, titanium atom, and zirconium atom, X represents a hydroxyl group or a hydrolyzable group, n represents an integer from 1 to (m-1), m represents an atomic valence of said metal M, and in those cases where n is 2 or greater, said R^1 groups are either identical or different, and in those cases where (m-n) is 2 or greater, said X groups are either identical or different, although of (m-n) X groups, at least one X group is a hydrolyzable group).

Claim 78. (New) A method for producing an organic thin film according to claim 70, wherein said step of bringing said substrate into contact with said organic solvent solution is conducted within a space that is maintained at a humidity of at least 40% RH.

Claim 79. (New) A method for producing an organic thin film according to claim 70, wherein said step of bringing said substrate into contact with said organic solvent solution is conducted within a space that is maintained at a humidity of at least 60% RH.

Claim 80. (New) A method for producing an organic thin film according to claim 70, wherein said organic thin film is a crystalline organic thin film.

Claim 81. (New) A method for producing an organic thin film according to claim 70, wherein said organic thin film is a monomolecular film.

Claim 82. (New) A method for producing an organic thin film in which an organic thin film is formed on a surface of a substrate, comprising a step (A) of bringing said substrate into contact with an organic solvent solution comprising a metal-based surfactant having at least one hydrolyzable group, and a catalyst, wherein the water content within said organic solvent solution is either set to or maintained within a range from 50 to 1,000 ppm, and said catalyst is at least one

material selected from the group consisting of organic acids and acid catalysts, wherein said organic solvent solution is a hydrocarbon-based solvent solution or a fluorinated hydrocarbon-based solvent solution.

Claim 83. (New) A method for producing an organic thin film in which an organic thin film is formed on a surface of a substrate, comprising a step (A) of bringing said substrate into contact with an organic solvent solution comprising a metal-based surfactant having at least one hydrolyzable group, and a catalyst, wherein the water content within said organic solvent solution is maintained within a range from 50 to 1,000 ppm, and said step (A) is repeated at least two times using the same solution, and said catalyst is at least one material selected from the group consisting of organic acids and acid catalysts, wherein said organic solvent solution is a hydrocarbon-based solvent solution or a fluorinated hydrocarbon-based solvent solution.